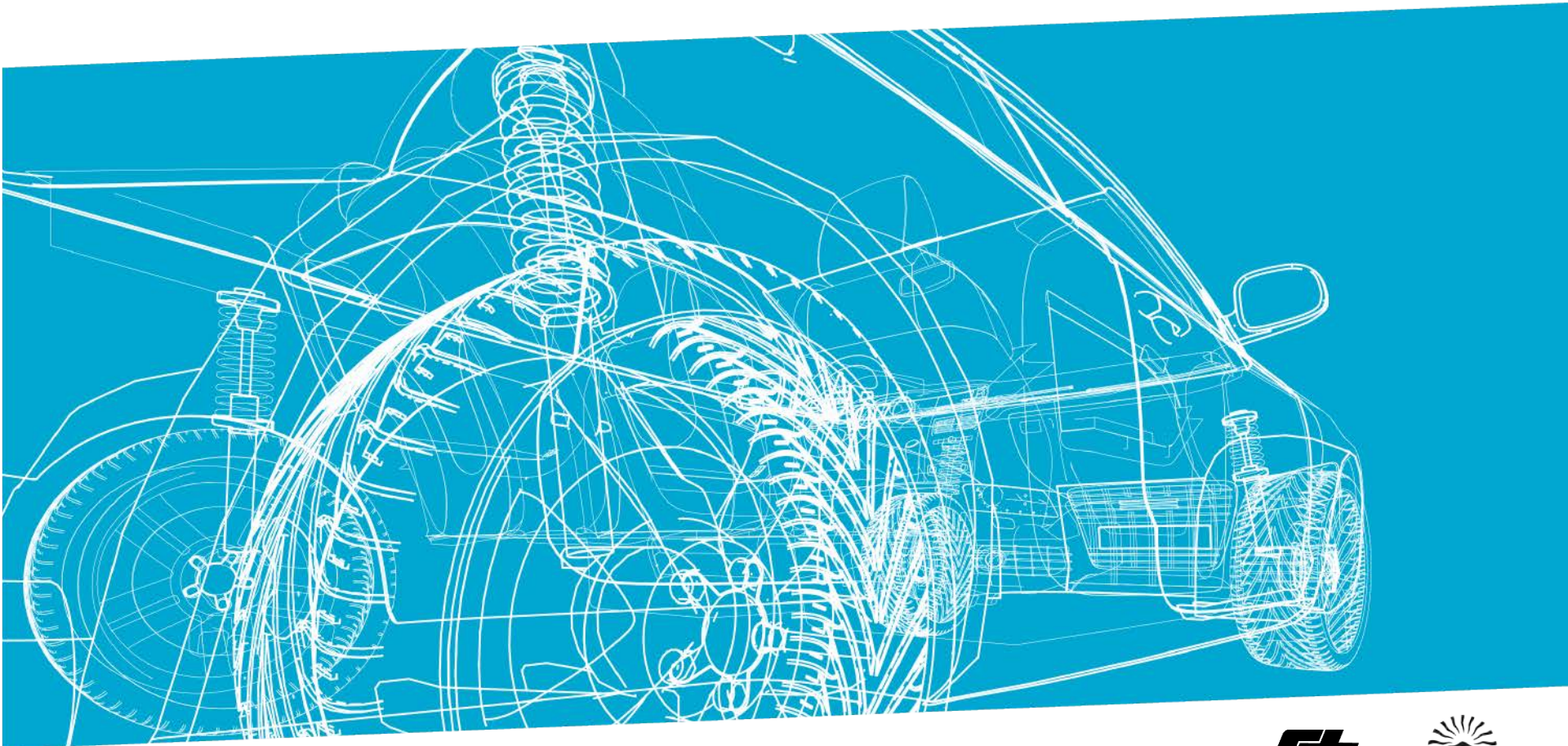


SAN DIEGO REGIONAL PROVING GROUND

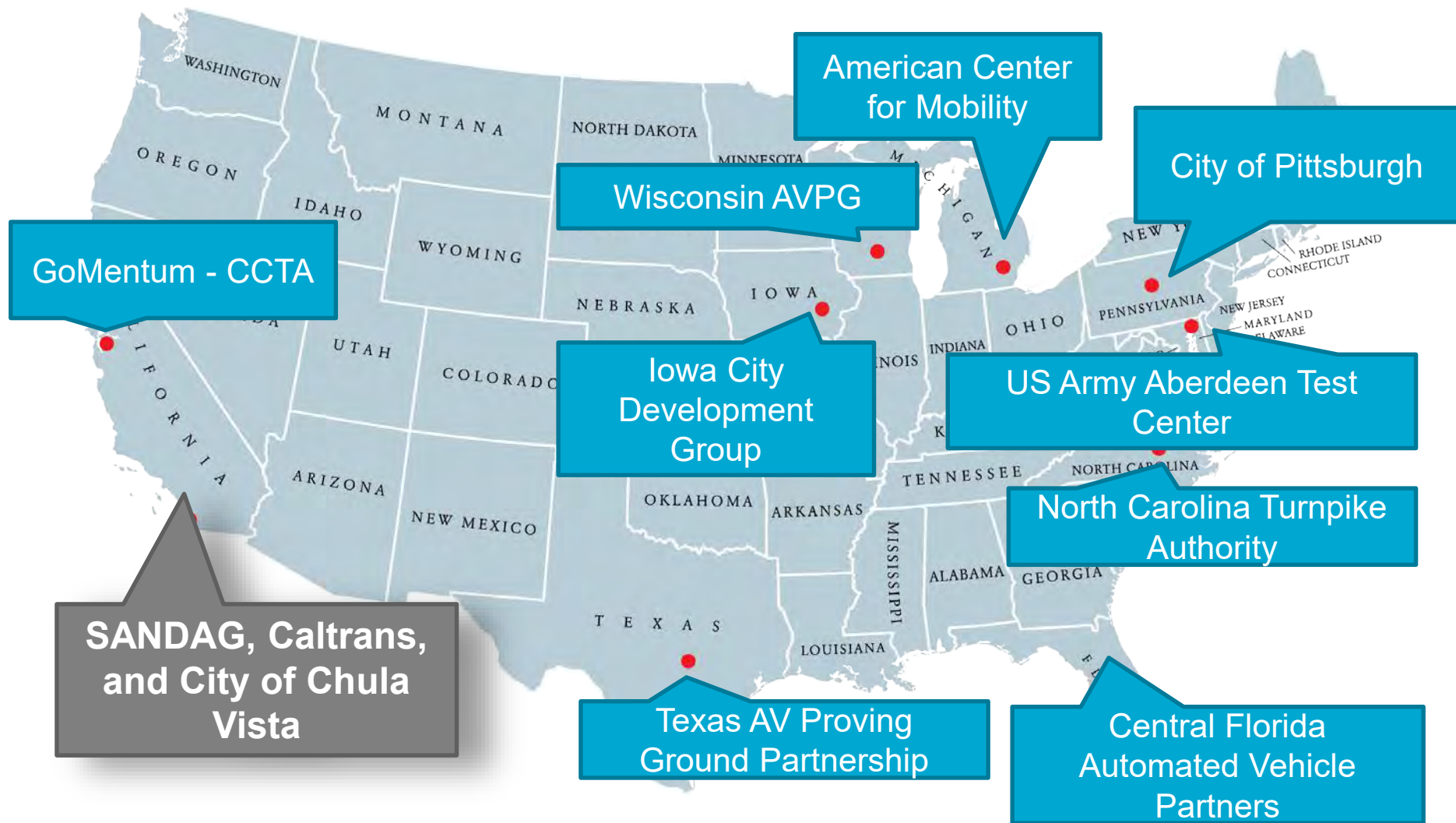
CALIFORNIA TRANSPORTATION COMMISSION - MAY 16, 2018



sandag.org/provingground



Designated Proving Grounds



San Diego Regional Proving Ground Purpose

- Facilitate testing and validation of connected and autonomous vehicle technologies while ensuring public safety and security
- Inform public policy and long-range planning that guides deployment in support of the region's goals for mobility, sustainability, and economic prosperity



Regional Proving Ground Progress

- Established a consortium of industry affiliates, government, and academic partners
- Safety management planning
- Planning for demonstrations and pilot projects
- Development of a statewide



Public Outreach and Education



What are Connected Vehicles?

In-vehicle and wireless technology enables connected vehicle (CV) communication:

- vehicle to vehicle (V2V)
- vehicle to infrastructure (V2I)
- vehicle to everything (V2X)

CVs give the car and driver advanced information and warnings to inform safer driving decisions, such as when a car ahead brakes suddenly or if there is an accident that causes traffic to slow or stop. CVs can share data about the vehicle with the driver ten times per second, such as if tires are slipping due to water on the road. These wireless communications are shared between vehicles (V2V) to improve road safety.

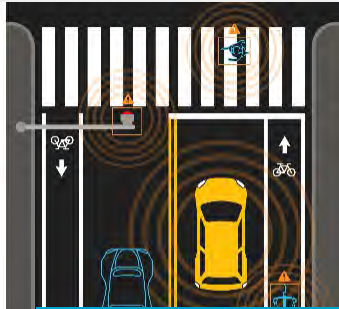
CVs can receive notifications from vulnerable road users (V2X) – like pedestrians, bike riders, and road workers – to alert drivers to use caution.

CVs also can communicate with traffic control infrastructure (V2I) like traffic signals, ramp meters, toll and parking payment systems, which could improve traffic flow and reduce emissions.

The National Highway Safety Administration reports that, when fully deployed, CVs could address 80% of unimpaired accidents.



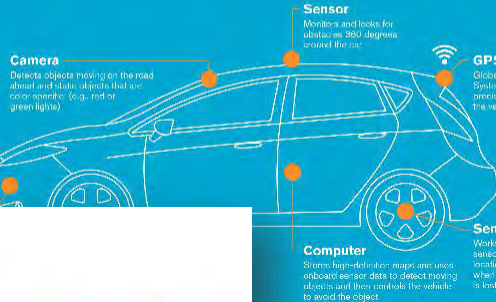
Connected Vehicles are not autonomous, however Autonomous Vehicles can be connected.



What are Autonomous Vehicles?

Driverless or self-driving cars are computer-driven and do not require a human to safely operate the vehicle. Sensors collect data about nearby objects like size and speed and categorize these objects (e.g., bike or pedestrian, other cars) to determine how the vehicle will react.

AVs have the potential to improve safety and mobility, and to reduce travel times and roadway congestion.



Benefits of Autonomous and Connected Vehicles

Autonomous vehicles (AVs) do not need to be connected to independently navigate, however, connected vehicle technologies make AVs safer and more efficient by providing advanced information about roadway conditions or potentially dangerous situations.

IMPROVED SAFETY

Driver error is a factor in **94%** of accidents

Self-driving cars are predicted to **significantly reduce vehicle accidents and increase bike and pedestrian safety**



REDUCED CONGESTION

Vehicles will be able to **drive closer together**. Reduced vehicle collisions will result in fewer back-ups and **optimized speeds**



RELIABLE TRAVEL TIMES

At optimal speeds, commutes can be **predicted in real-time**



IMPROVED MOBILITY

Seniors, disabled, transit dependent populations, and those not able to drive a vehicle will have **greater personal mobility** with AVs and CVs



INCREASED PRODUCTIVITY

Lost productivity from commuting is estimated at **\$160 billion** per year in the US

People can make **productive use of time** that would have been spent driving



POSITIVE ENVIRONMENTAL IMPACTS

AVs and CVs could **reduce energy consumption** through:

- more efficient driving
- efficient infrastructure

Fewer traffic jams will result in less idling and **reduced greenhouse gases**



REDUCED INFRASTRUCTURE NEEDS

Parking concerns are a major factor that limit urban development.

Self-driving technology can **reduce the need** to expand roadways and build parking structures



AVs and CVs could transform the urban landscape

MULTIMODAL CONNECTIVITY

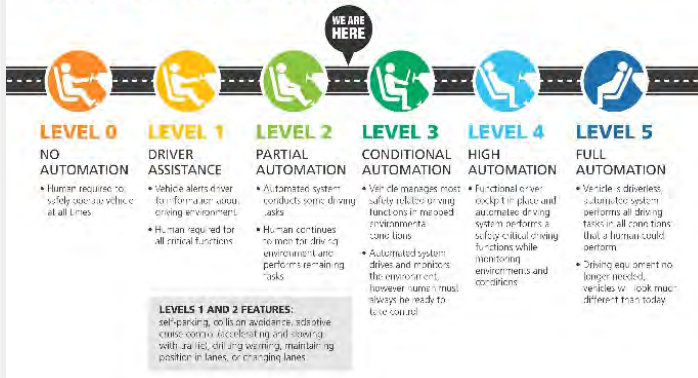
• AVs provide the **greatest benefit** when they are connected

• transit can operate **more reliably**

• people walking and biking **are safer** when vehicles can communicate with them through smartphones or other devices



Levels of Vehicle Automation



Upcoming Consortium Events

- RPG Consortium meeting on June 20, 2018
 - Preparing the Public for Automation
 - AV market research and public outreach strategy
 - California DMV regulations
 - Law enforcement panel
 - UC San Diego demonstrations
- Upcoming consortium events:
 - Cybersecurity
 - Smart Cities and Mobility

Learn More at sandag.org/provingground



The screenshot shows the SANDAG website with a navigation menu on the left and a main content area on the right. The navigation menu includes 'PROGRAMS' and 'RESOURCES' sections. The 'PROGRAMS' section lists 'Transportation' as the active category, with sub-links for 'Services', 'Public Transit', 'Roads and Highways' (highlighted), 'Air Quality', and 'Freight Systems'. The 'RESOURCES' section lists 'Demographics and Other Data' and 'Maps and GIS'. The main content area is titled 'Roads and Highways' and features the 'San Diego Regional Proving Ground' page. This page includes a paragraph about the selection of the site by the U.S. Department of Transportation (USDOT) on January 19, 2017, and a list of focus areas for the consortium. At the bottom of the main content area, there are two buttons: 'Learn More' and 'Become an Affiliate', each with a corresponding image.

SANDAG

ABOUT SANDAG | MEETINGS | CALENDAR | PUBLIC NOTICES | CAREERS | CONTRACTS | INVESTOR RELATIONS

PROGRAMS

Transportation

Services

Public Transit

Roads and Highways

Air Quality

Freight Systems

Land Use and Regional Growth

Biking and Walking

TransNet

Public Safety

Borders

Environment

Economics and Finance

Regional Airport Access

RESOURCES

Demographics and Other Data

Maps and GIS

Roads and Highways

San Diego Regional Proving Ground

On January 19, 2017, the U.S. Department of Transportation (USDOT) selected the San Diego region as one of ten autonomous vehicle (AV) proving ground sites in the nation. The designated proving grounds will form a national community of practice that will share information and collaborate with the private sector to advance the safe deployment of AVs.

SANDAG, in partnership with the City of Chula Vista and Caltrans District 11, proposed three distinct AV testing environments (the Interstate 15 Express Lanes, the southern segment of the South Bay Expressway, and local streets and roads within the City of Chula Vista) that compose the San Diego Regional Proving Ground.

The San Diego Regional Proving Ground formed a consortium of industry affiliates, government, and academic partners to collaborate around connected and autonomous vehicle technology, public policy, regulations, and research and development. On October 19, 2017, during the first meeting of the consortium, several focus areas were discussed as potential opportunities for demonstrations:

- Transit and mobility
- Cybersecurity and data
- Smart streets and smart fleets
- Freight and the international border
- Wireless charging and transponderless tolling
- Public outreach and education

Learn More

Become an Affiliate